Remote Source Lighting

Status: Transitioned

PROBLEM / OBJECTIVE

Remote source lighting (RSL) systems are being introduced to replace traditional direct lighting systems in applications where maintenance, safety, or lifecycle costs are issues. The present system of ships lighting is conventional point-to-point wiring using a diversity of lamp assemblies. This approach generates considerable maintenance requirements for spare parts and personnel to install them. A demonstration of RSL technology was made on the DDG-78 by a team led by Northrop Grumman Ship Systems. This demonstration proved the concept for shipboard lighting and exhibited many improvements over the conventional lighting system. This demonstration identified cost drivers as well as areas needed to be addressed for RSL systems to be able to withstand the rigors of at-sea deployment and to meet the needs of the Navy extended operation. Areas identified in the DDG-78 demonstration include reduced hardware and installation costs, improved efficiency and illumination levels (i.e. improved coupling and reduced losses during transmission), optimization of fiber optic materials/sizes, and improved overall lifecycle costs.

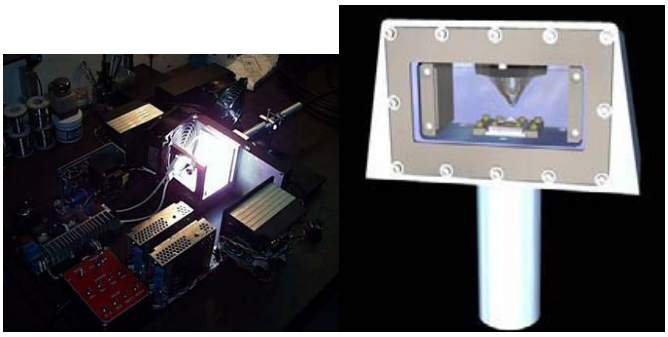
ACCOMPLISHMENTS / PAYOFF

Process Improvement:

The goal of this project was to evaluate materials and manufacturing processes that reduced the initial component procurement and installation costs of RSL systems to costs comparable with conventional lighting systems. This included the development of rugged, flexible, low cost fiber with low losses across the visible spectrum, cabling of the fiber, and the development of efficient coupling to low cost, long life, high intensity light sources all of which were achieved.

Implementation and Technology Transfer:

- Implemented on LPD-17 for masthead light & task lights
- Planned for implementation on DD(X)



Illumination Source

Waterline Security Light

Expected Benefits:

- Fiber Cost reduced to $1.50/M
- Cable Cost reduced to $28/ft
- Chromaticity & Transmission: 5X Improvement over PMMA (SAE-AS25050 lunar identification white)

TIME LINE / MILESTONE

Start Date: October 2000
End Date: May 2003

FUNDING

Total ManTech Investment: $824K
Cost Sharing (Northrup Grumman): $870K

PARTICIPANTS

ONR ManTech
PMS-400
Electro-Optics Center
Northrop Grumman Ship Systems